Hawai'i Environmental Report Card 2004

Environmental Council

Environmental Report Card 2004

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Introduction

This Annual Report

The 2004 Annual Report by the Environmental Council is focused on reviewing the last five (5) years Annual Reports and commenting on the improvements and forward progress accomplished by the State of Hawaii. Students, policy makers, government agencies, and the public can use this document as a "progress report card" in managing the key issues of our natural and urban environment.

This report contains an update of the key Environmental Indicators, reflecting varying degrees of progress made in the State of Hawaii to address the balance between economic and environmental concerns with the ultimate goal of preserving and protecting our environment.

This Annual Report also presents the submissions and responses by varying government agencies as to the questionnaire which the Council sent earlier this year, in order to find out the reasons or barriers encountered towards improving the progress made towards attaining the recommendations set forth in the past five year's recommendations, and what areas we need to concentrate our future efforts to achieve the goals of managing and balancing our natural, urban, and economic environment.

Cover Drawing

The cover drawing is the kindergarten section winner of the Department of Land and Natural Resources' 2003 Year of the Hawaiian Forest Poster Contest. The art work was completed in May 2003 as a class project taught by Ms. Gail Kuba and Ms. Diane Fell at the Kamehameha Schools Maui Campus.

The Environmental Council

The Environmental Council is a fifteen-member citizen board appointed by the governor to advise the State on environmental concerns. The Council is responsible for making the rules that govern the Environmental Impact Statement (EIS) process for the State. The Council is empowered to approve an agency's "exemption list" of minor activities that can be implemented without first preparing an Environmental Assessment (EA).

Created in 1970, the Council is empowered to monitor the progress of state, county, and federal agencies' environmental goals and policies. In a report each year, the Environmental Council must advise state policy makers on important issues affecting Hawai'i's environment.

The Office of Environmental Quality Control

The Office of Environmental Quality Control (OEQC) was established in 1970 to help stimulate, expand and coordinate efforts to maintain the optimum quality of the State's environment. OEQC implements the Environmental Impact Statement law, HRS Chapter 343. Office planners review and comment on hundreds of environmental disclosure documents each year. Twice a month the OEQC publishes ***The Environmental Notice***. This bulletin informs the public of all the projects being proposed in the State that are subject to public review and comment. At the request of the governor, the Director of the OEQC is empowered to coordinate and direct State agencies in matters concerning environmental quality.

Acknowledgements

The Environmental Council would like to express our many thanks to the following individuals and agencies in compiling this report.

OEQC Staff
State Department of Accounting & General Services
State Department of Agriculture
State Deparment of Attorney General
State Dept. of Business, Economic Dev., & Tourism
State Department of Hawaiian Home Lands
State Department of Health
State Department of Defense
State Department of Education
State Department of Transportation
State Department of Land & Natural Resources
Maui Dept. of Public Works & Env. Management
Maui Department of Housing & Human Concerns
Maui Department of Planning
Maui Department of Water Supply
Kauai Office of Economic Development
County of Kaua'i, Department of Water
County of Hawai'i, Office of Housing and Comm. Dev.
Honolulu Fire Department
Honolulu Department of Facility Maintenance
Honolulu Department of Environmental Services
Honolulu Department of Design & Construction
Honolulu Department of Parks and Recreation
Oahu Civil Defense Agency
Honolulu Department of Transportation Services

Recommendation to the Governor

The Environmental Council has provided an Annual Report Card highlighting the environmental concerns for the following areas of focus for the years 1999-2003. The following is a condensed summary that was presented to the Governor and the State Legislature in the past five years Annual Reports. It is reprinted in this 2004 Annual Report, as the Council does not find any of the recommendations stated to be unreasonable, or is not in compliance with the State's best interest in following HRS Chapter 344 guidelines for the State's Environmental Policy.

1999-Solid Waste Management: The Council recommended actions to support local recycling enterprises, establish recycling demonstration projects, implement a comprehensive recycling program, invest in infrastructure to recycle, provide more funding to the Department of Health, support the development of a market for recycling products, use glassphalt for paving roadways, create preference for non-polluting recycling activities, amend definition of maritime business to include recycling, provide funds for market development research, enforce current recycling laws, and expand the "advance disposal fee" program.

2000-Global Warming-Greenhouse Gas Emissions: The Council recommended that the Governor and Legislature support the Kyoto Protocol to the United Nations Framework Convention on Climate Change, signed by the United States in November 1998, and accordingly, commit to reduce Hawai'i's greenhouse gas emissions by 7% less than 1990 emissions by 2008–2010.

2001-Hawaii's Biodiversity' Protection from Alien Species: The Council recommended actions to prevent new potentially devastating alien species from entering the state, control or eradicate existing invasive alien species, increase public awareness of alien species, provide dedicated funding for the State's Natural Area Reserve Fund, and support community activities that control alien species.

2002- Hawaiian Forests-Preservation/Conservation: The Council recommended actions to establish critical habitats, increase funding for forestry programs, establish incentive programs to farm forest products, establish more fencing projects, require riprarian buffers, establish native tree farms, and support public education projects.

2003-Minimizing Population Growth Impact on Environmental and Cultural Resources: The Council recommended actions to rethink land use planning in Hawai'i, encourage infill development to take maximum advantage of existing infrastructure, pass legislation to promote sustainability in design and construction, increase environmental awareness of decision makers, and strictly enforce land use and environmental regulations.

The Council provided in each of the aforementioned Annual Reports, specific recommendations to the Governor and the State Legislature on areas where attention or focus is required towards improving the progress made by the State of Hawaii.

The 2004 Annual Report Card provides a review of the progress accomplished by the State's public, private, and policy-making sectors based on the recommendations noted in these Annual Reports.

The Council has independently collected and updated the data for the key environmental indicators highlighted annually, and has also requested input and comments from the key agencies. The letter sent to each agency is highlighted below.

The Environmental Council is currently in the process of drafting the 2004 Hawaii Environmental Annual Report. The 2004 Annual Report will focus on a review of the past five (5) years' Annual Report Cards, from 1999-2003, and provide an update about the progress that the State of Hawaii has made towards the recommendations in each report.

In each Annual Report from 1999 - 2003, the Environmental Council offered specific recommendations to the Governor and the State Legislature. The Annual Reports focused on the topics of:

- 1999-Improving Hawaii's Solid Waste Recycling Rate
- 2000-Global Warming and recommendations to reduce the green house effect.
- 2001-Preserving Hawaii's Biodiversity
- 2002-Preserving our Hawaiian Forests
- 2003-Minimizing Population Growth Impacts on Environmental and Cultural Resources.

The Environmental Council has developed the attached questionnaire sheet to assess progress toward achieving the recommendations from 1999 - 2003. The questionnaire includes a request that each agency relate any difficulties which prevented the agency from accomplishing these goals and suggest ways to improve the ability to achieve these recommendations.

Questionnaire

The Environmental Council's objective in 2004 is to assess progress toward accomplishing the recommendations made in the Annual Reports from 1999 – 2003, including the following:

A) Measure the progress made by the agencies towards accomplishing these recommendations.

B) Identify issues or areas where agencies encountered difficulties or barriers that prevented progress towards accomplishing the recommendations.

C) Recommendations from the agencies that can be incorporated in the 2004 Annual Report that can facilitate the future progress of accomplishing these recommendations.

The 1999 – 2003 Annual Reports of the Environmental Council Review can either be viewed in hard copy or through the website (http://www.state.hi.us/health/oeqc/annualrpts/index.html). Each Annual Report has an Introduction section, which covers the recommendations by the Council to the Governor on how the State of Hawaii can progress towards achieving the preservation of our environment through practical steps or efforts made by the Governor, the Legislature, or the public.

Questions

1. Please review the Environmental Council's recommendations of the past 5 years and list which recommendations your agency has successfully implemented or is in the process of implementing.
2. Please list any difficulties or barriers that your agency has encountered in attempting to implement the recommendations.
3. Please list the recommendations made by the Environmental Council that your agency does not support, and state your reasons for not supporting them.
4. Please provide your recommendations about how to facilitate or improve the progress for the future.

Recommendation to the Governor

Also, the request for the 2004 goals and objectives have been submitted by the agencies noted in this report, and the recommendations outlined in this Annual Report are based on; 1) the updated key indicators and the improvements made by sector, 2) the submission of the key goals and objectives for this year; 3) the submission response received to the Environmental Council by the agency; 4) and the current status of the agency's exemption list being within 5 years.

The following represents our recommendations for actions that will assist our State's efforts in increasing the progress of change towards addressing our State's most valuable concern; the future legacy of our environment for the future of our children of the islands.

It is the opinion of the Environmental Council that for the past five years, the recommendations provided to the Governor and the State Legislature are in compliance with Hawaii Revised Statutes(HRS) Chapter 344, the State Environmental Policy, in highlighting specific areas of need based on the development trends in the State of Hawaii. In doing so, there have been no major hurdles or barriers reported which have prevented these objectives of HRS Chapter 344 as a guideline to be attained.

The progress measurements noted in the key indicators does show that the State of Hawaii is not systematically and uniformly improving on accomplishing the objectives outlined by either the Environmental Council's recommendations or by the guidelines established in HRS Chapter 344. The Environmental Council recommends improvements in the environmental report card. The response to our questionnaire can be further summarized by the following: **a) The State, County, and all agencies place the priority of our Environment in the forefront to improve the goals and objectives; b) provide adequate funding in order to facilitate the projects or the attainment of the annual goals and objectives; and c) full support required by all elected and appointed officials at the State and County government levels.**

The Environmental Council's opinion to the aforementioned is to add; **d) "Creativity through the right attitude and enforcement to solve or attain the goals and objectives" as a key ingredient to all sectors, and e) State and County agencies should update their environmental impact assessment exemption list every 5 years.** This addition to the recommendation to the Governor and the State Legislature will hopefully filter down to all levels of government private sectors and residents and place environmental concerns on the priority list as we view any decisions for the future regarding to the State of Hawaii.

Summary

1) Make environmental protection top priority

2) Obtain adequate funding to implement environmental projects

3) Seek full support of elected officials to achieve environmental goals

4) Use creativity to attain environmental goals & objectives

5) Update agency EIS exemption lists every five years

The Environmental Council recommendation questionnaire received a 37% return by the deadline. The Council wishes to once more acknowledge and thank these agencies (listed below that responded to the questionnaire and their 2004 goals and objectives.

Agencies Responding to Questionnaires

State Department of Accounting & General Services
State Department of Agriculture
State Deparment of Attorney General
State Department of Business, Economic Development, and Tourism
State Department of Hawaiian Home Lands
State Department of Health
State Department of Defense
State Department of Education
State Department of Transportation
State Department of Land & Natural Resources
Maui Department of Public Works and Environmental Management
Maui Department of Housing & Human Concerns
Maui Department of Planning
Maui Department of Water Supply
Kauai Office of Economic Development
County of Kaua'i, Department of Water
County of Hawai'i, Office of Housing and Community Development
Honolulu Fire Department
Honolulu Department of Facility Maintenance
Honolulu Department of Environmental Services
Honolulu Department of Design & Construction
Honolulu Department of Parks and Recreation
Oahu Civil Defense Agency
Honolulu Department of Transportation Services

Council's Report

A Message from the Chair

The Environmental Council wishes to continue to highlight the need for awareness in preserving Hawaii's environment for the future legacy of our children.

The key issue of economic stability versus preserving our environment will always require "balance" in order to continue to sustain the State of Hawaii's momentum in addressing these two areas. Total economic growth in population, industry, jobs and opportunities without an environmental concern or viewpoint will destroy the very nature of why Hawaii is so desirable today and will destroy the future for the islands.

The Environmental Council recommends the following: **a) The State, County, and all agencies place the priority of our Environment in the forefront to improve the goals and objectives; b) provide adequate funding in order to facilitate the projects or the attainment of the annual goals and objectives; and c) full support required by all elected and appointed officials at the State and County government levels, d) "Creativity through the right attitude and enforcement to solve or attain the goals and objectives" as a key ingredient to all sectors, and e) State and County agencies should update their environmental impact assessment exemption list every 5 years.**

It is the wish and desire of the Environmental Council that all agencies, the private sector, and the residents of the State of Hawaii join together in placing our Environment, as a priority in our daily life, in both the workplace and home environment. This sensitivity will continue to perpetuate the awareness for all future generations and will help in reassessing the planning process for future economic development within the State of Hawaii. Short termed initiatives that address immediate problems facing our environment should not be considered as long term solutions. We need to continue to assess and interpret the needs of the State through the agency approval process and the legislative process in order to create balance and a sustainable Hawaii.

Mahalo and Aloha,
Victor Kimura

OEQC's Report

As the "Year of the Ram" comes to a close, I would like to say that it has been an honor and privilege working with, and meeting many wonderful and caring people. OEQC is indebted to all those dedicated individuals and organizations that believed in our mission to ensure a healthy environment for Hawaii.

OEQC highlights for 2004:

1. Expansion of our website and links to The Environmental Notice, Environmental Council and self-help to Chapter 343.

2. Completion of the cultural practice flash cards for distribution to our schools.

3. Several workshops and pre-consultation to state, county, federal and private planners for compliance to Chapter 343.

4. Completion of scanning all environmental assessments from 1999 - 2003 onto CD-ROM to improve the availability of documents to the public.

Projected goals for 2005:

1. Completion of scanning environmental assessments for the year 2004 and selected environmental impact statements.

2. Educating the general public on the Chapter 343 process so they can better participate.

3. Organize a workshop for cultural consultants on the process for Chapter 343.

4. Bridge the gap with all state, county, federal and the public in working together toward a better quality of life.

To the OEQC staff and the environmental council, I thank all of you who have enabled OEQC with our accomplishments this past year.

Genevieve Salmonson
Director

Section I

Environmental Indicators

Environmental indicators are measurements that track environmental conditions over time. Each year, the Environmental Council collects data on important indicators of the health of Hawai'i's environment. These data are presented in text, tables and graphs so that the public and policy makers can readily understand the status of Hawai'i's environment today. The indicators provide a comprehensive look -- from water quality to native species -- at the many faceted task of keeping Hawai'i clean and healthy.

The indicators presented in the Annual Report of the Environmental Council are organized this year in categories reflecting the principles of ecosystem sustainability. In order for an ecosystem to be sustainable, it must:

1) Use sunlight or other renewable alternatives such as wind as the source of energy
2) Dispose of wastes and replenish nutrients by recycling all elements
3) Maintain biodiversity
4) Maintain the size of human or animal populations so that "overgrazing" and overuse do not occur

It may be possible for an ecosystem to sustain itself for long periods without adhering strictly to these principles. However, sustainability in perpetuity can be achieved only if the above principles are met.

In this section the Environmental Council also grades the status of Hawai'i's environment. The Council hopes that this evaluation stimulates the public to learn about and take action to improve our environment.

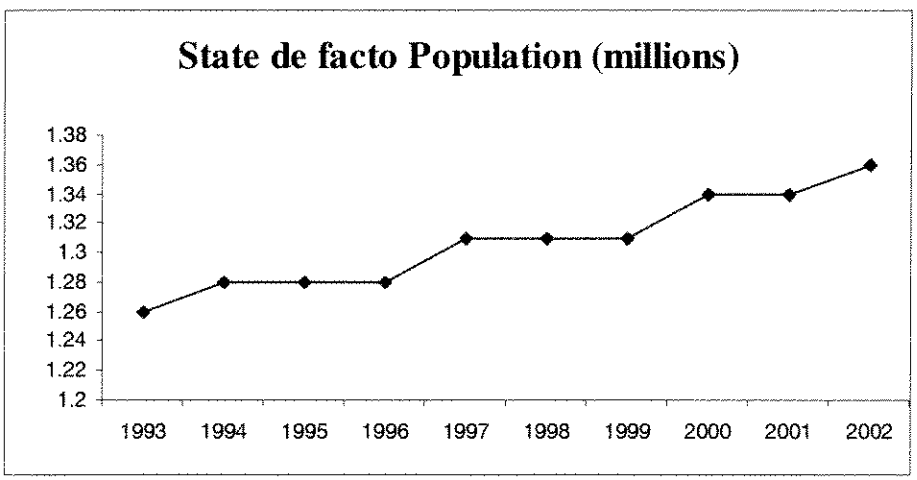
Population

State Population

The stress of population growth adds pressure on our ecosystem. More people means more wastes, more housing areas, more cars. Hawai'i's *de facto* population (which include visitors present but excludes residents temporarily absent) keeps growing from year to year. DBEDT estimates that by year 2020 our de facto population will reach 1.72 million--a 30% increase. This population increase creates many challenges as we try to balance the needs of our people and the health of our ecosystem. According to the Commission for Environmental Cooperation (2001), an average person in the U.S. consumes four times as many resources as the average person in the world. Reducing our consumption is one way to minimize our impact on our ecosystem. Further, we need to also identify, within the population spectrum, the inclusion of the number of tourists who visit the State of Hawaii annually. The State of Hawaii's environmental capacity to sustain both the residents and the visitors to the islands will need to be addressed in the next annual report. The Environmental Council, for the 2004 Annual Report, has included the visitor arrivals and number of visitor days for the years of 1999-2003 in order to highlight the fluctuating consumptions which do impact the State's capacity and balance between the environment and the economy.

Hawai'i *de facto* population (July 1) and visitor numbers (calendar year)

Year	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
State *de facto* Population (million)	1.26	1.28	1.28	1.28	1.31	1.31	1.31	1.34	1.34	1.36
Visitor Arrivals (million)	na	na	na	6.7	6.8	6.6	6.7	6.9	6.3	6.4
Visitor Days (million)	53.8	57.2	57.3	57.9	57.4	57.4	60.0	61.7	57.8	60.1



Source: State of Hawai'i Data Book 2003.
Note: The vertical axis does not begin with zero.

Energy Use

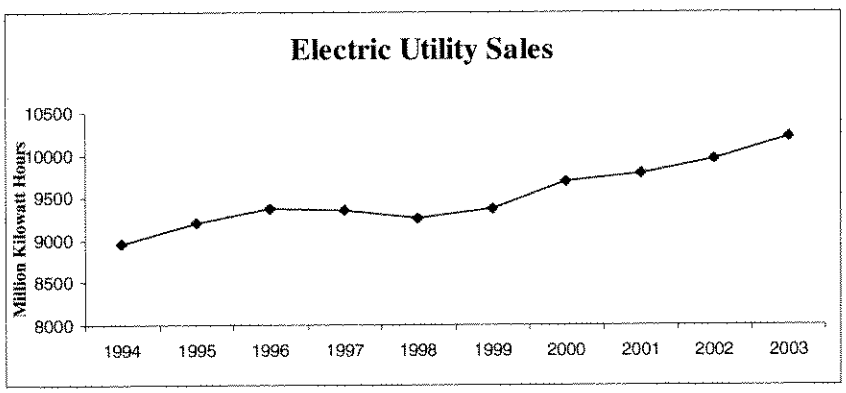
Electric Utility Sales

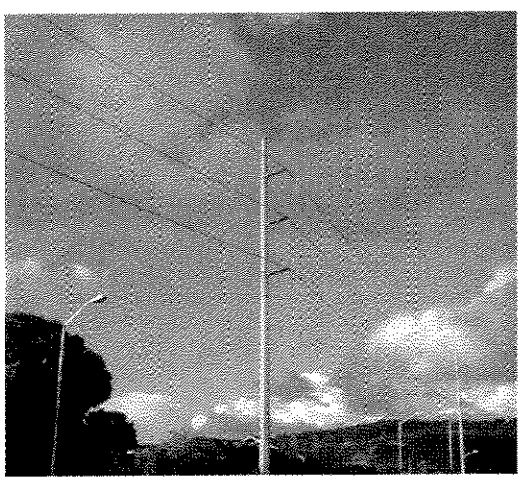
The table below depicts the growth in electricity sales in Hawai'i. Statewide from 1990 to 2003 sales are up 22.9%. Oahu sales increased only 16.3%, although recent record peak demands on the Hawaii Electric Company system led to utility calls for customers to reduce electricity use.

Hawai'i Electric Utility Sales by Calendar Year

Year	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
State Utility Sales (Million kWh)	8,952	9,194	9,381	9,347	9,264	9,375	9,691	9,777	9,948	10,213

Sources: State of Hawai'i DBEDT, Strategic Industries Division, Energy Data Services; Utility FERC-1 and Annual Reports to the Public Utilities Commission.
Note: The vertical axis does not begin with zero.





Environmental Indicators

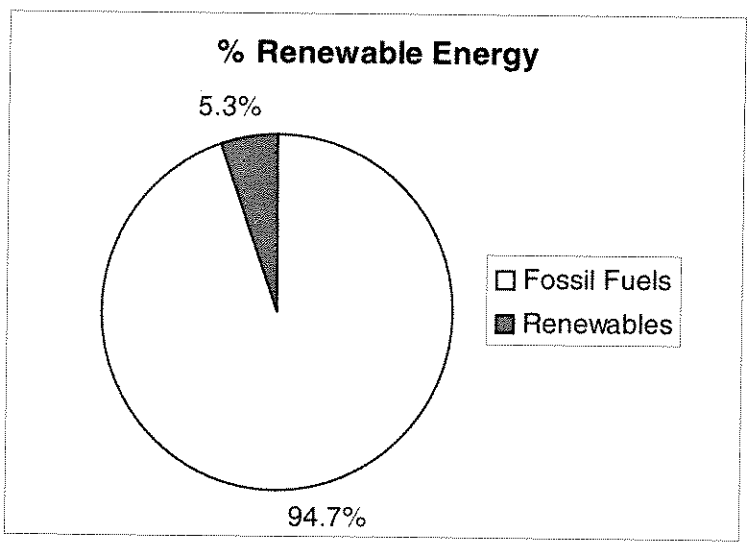
Energy Used in Hawai'i

One of Hawai'i's goals is to replace energy produced from fossils fuels with alternate and renewable sources such as solar power, biomass, hydro-electric, wind, geothermal and solid waste. The table below shows the amount of energy used in Hawai'i in trillion British thermal units (BtU) used. In 2002, geothermal production was reduced due to problems with the wells providing steam to generators at Puna on the Big Island.

Total Energy Used in Hawai'i in Trillion BtU by Calendar Year

Source	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Petroleum	285.5	274.0	277.1	278.3	269.1	272.5	290.2	273.8	272.8	284.4
Coal	13.6	16.5	16.9	16.8	14.8	14.5	15.5	15.8	17.1	18.2
Biomass	16.4	11.8	10.4	9.0	7.5	9.2	7.1	3.4	5.6	6.3
Solar Hot Water	2.3	2.8	3.1	3.1	3.1	3.5	3.6	3.7	4.0	4.1
Hydroelectric	1.5	1.1	1.1	1.0	0.8	1.2	1.0	1.0	1.0	0.8
Wind	0.2	0.2	0.2	0.2	0.2	0.0	0.2	0.2	0.1	0.1
Geothermal	1.8	2.3	2.4	2.4	2.3	2.0	2.6	2.1	0.8	1.8
Solid Waste	6.2	6.4	4.7	5.3	5.1	5.1	5.1	4.5	4.7	4.7
Photovoltaic	0.0003	0.0003	0.0005	0.0008	0.0020	0.0027	0.0043	0.01	0.01	0.02
Total	**327.5**	**315.1**	**315.9**	**316.1**	**302.9**	**308.0**	**325.2**	**304.4**	**306.1**	**320.4**

Source: State DBEDT, Energy, Resources, and Technology Division, Energy Data Services.



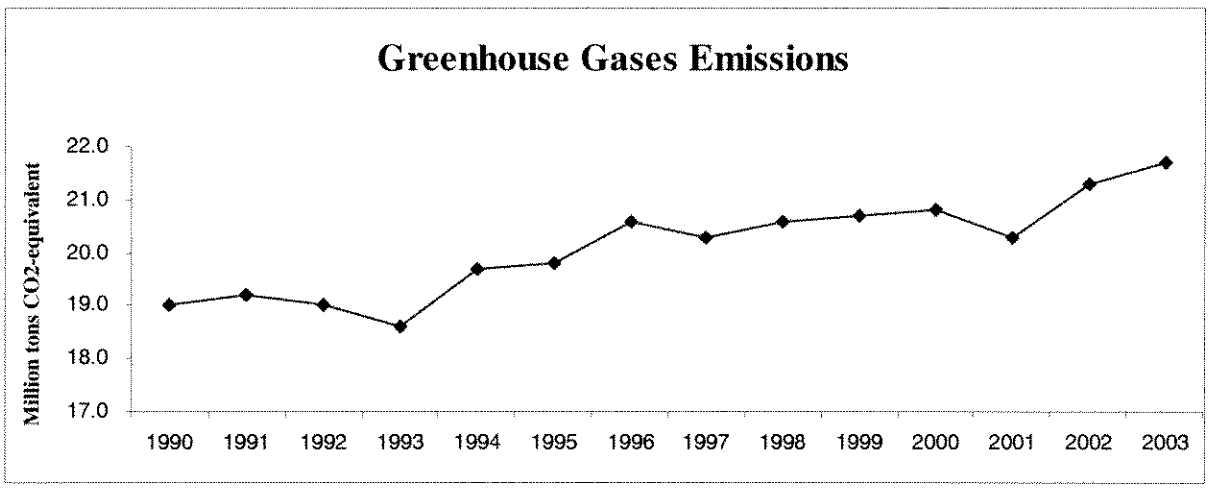
Estimated Greenhouse Gas Emissions

The earth's climate is changing because human activities are altering the composition of the atmosphere through the buildup of greenhouse gases, primarily carbon dioxide, methane, nitrous oxide, and chlorofluorocarbons. The energy sector produces 90 percent of the greenhouse gases. The table below shows the estimated greenhouse gas emissions in Hawai'i.

Estimated Greenhouse Gas Emissions in Millions of Tons Carbon Dioxide Equivalent by Calendar Year

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Greenhouse Gasses (Millions of Tons Carbon Dioxode Equivalent)	19.7	19.8	20.6	20.3	20.6	20.7	20.8	20.3	21.3	21.7

Source: State DBEDT, Energy, Resources, and Technology Division, Energy Data Services.



2000 recommendations to the Governor on "Global Warming: No More Business as Usual"

The Environmental Council recommends that the Governor and Legislature support the Kyoto Protocol to the United Nations Framework Convention on Climate Change, signed by the United States in November 1998, and accordingly, commit to reduce Hawai'i's greenhouse gas emissions by 7% less than 1990 emissions by 2008–2010. The *Hawai'i Climate Change Action Plan* (DBEDT, 1998) offers many strategies for reducing greenhouse gas emissions.

Environmental Indicators

Fossil Fuel Imported into Hawai'i

Fossil fuels are coal, oil and natural gas which formed inside the earth from the remains of plants and animals that lived many years ago. The table below shows the amount of imported fossil fuel imported into Hawai'i by type.

Total Imported Fossil Fuel into Hawai'i in Trillion BtU by Calendar Year

Type of Imported Fuel	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Crude Oil	323.9	298.2	301.9	296.4	299.6	272.5	289.4	300.8	282.3	282.1
Refined Oil Products	10.6	13.7	31.3	37.3	39.3	49.6	58.7	25.5	17.7	45.5
Coal	14.2	16.5	16.1	16.8	14.8	14.5	15.7	15.8	17.1	18.2
Total	**348.7**	**328.4**	**349.3**	**350.5**	**353.7**	**336.6**	**363.8**	**342.1**	**317.1**	**345.9**

Source: State DBEDT, Energy, Resources, and Technology Division, Energy Data Services.
Note: Figures in trillion British thermal units (TBtu).

Fossil Fuel Use in Hawai'i

Hawai`i's over dependence upon imported oil is a major concern. In the event of a disruption in the world oil market, Hawai'i's economy and way of life would be adversely affected. Environmentally destructive oil spills are always a possibility during the transport of petroleum products. The table below shows the amount of fossil fuel used by category.

Amount of Fossil Fuel Used in Hawai'i by Category in Trillion BtU by Calendar Year

Sector	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Electricity Production (Oil)	82.2	78.6	84.2	83.2	85.6	87.2	91.8	87.2	88.0	88.3
Electricity Production (Coal)	13.6	16.5	16.9	16.8	14.8	14.5	15.5	15.8	17.1	18.2
Transportation - Ground & Water (Oil)	81.5	82.1	75.9	74.0	78.8	75.9	76.6	73.1	79.7	83.9
Transportation - Air (Oil)	90.0	96.5	102.4	102.7	93.3	92.3	102.7	92.8	86.0	88.2
Other Sectors (Oil)	17.7	9.3	15.1	18.4	11.5	17.1	19.1	20.7	19.1	24.0
Total	**285.0**	**283.0**	**294.5**	**295.1**	**284.0**	**287.0**	**305.7**	**289.6**	**290.0**	**302.7**

Source: DBEDT, Energy Division, Energy Data Services.

Use and Recycling of Resources

Municipal Water Consumption

Good drinking water is one of Hawai'i's greatest natural assets. The combination of a growing population and limited potable water resources is reducing the availability and quality of our drinking water.

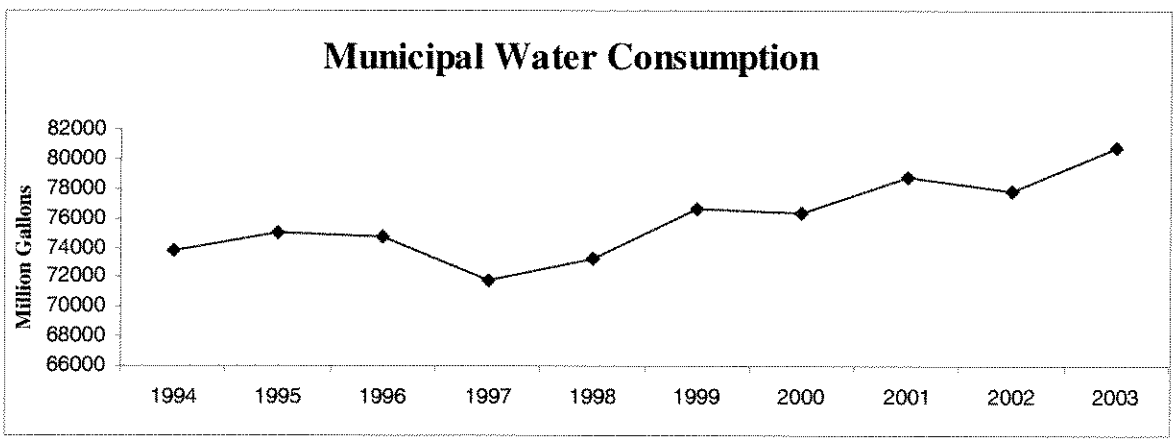
The table below shows water consumption through the respective municipal (county) water distribution systems.

Municipal Water Consumption During the Year Ending June 30 (in millions of gallons)

Fiscal Year	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Honolulu	50,407	51,006	50,682	48,624	49,265	51,614	51,020	52,608	52,405	54,576
Kauai	4,149	4,114	4,206	3,944	4,148	4,373	4,309	4,631	4,226	4,298
Hawaii	7,999	8,378	8,363	7,804	8,159	8,097	8,353	8,676	8,925	9,166
Maui	11,177	11,494	11,477	11,438	11,729	12,547	12,719	12,833	12,312	12,695
Total (MG)	**73,732**	**74,992**	**74,728**	**71,810**	**73,301**	**76,631**	**76,401**	**78,748**	**77,868**	**80,735**

Source: The State of Hawai'i Data Book 2002 prepared by the Department of Business, Economic Development and Tourism; Honolulu Board of Water Supply; Hawai'i County Department of Water Supply; Kaua'i Department of Water; and Maui Department of Water Supply.
Note: i) These figures include only municipal water supply. Military, private and plantation water systems are not included.

Note: The vertical axis does not begin with zero.



Environmental Indicators

Wastewater Treatment and Reuse

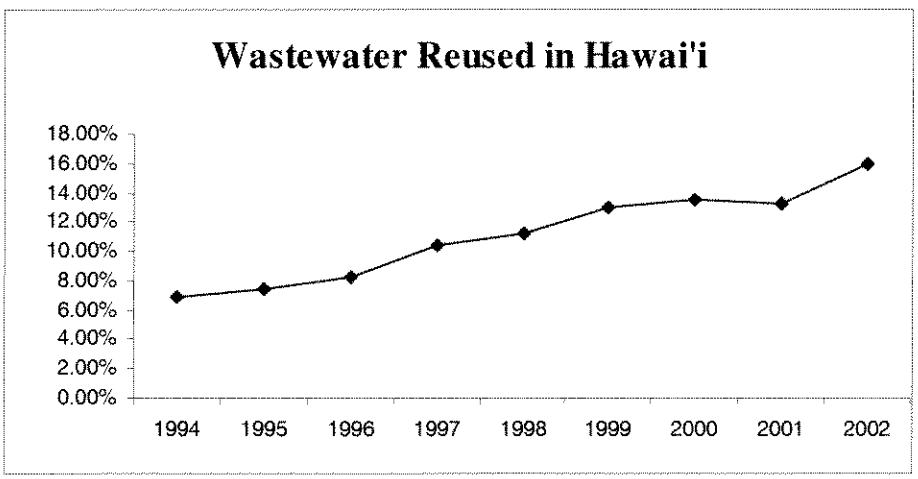
Promotion of wastewater management practices that protect, conserve and fully utilize water resources is vital for Hawai'i. One way to achieve this objective is to use water reclaimed from wastewater treatment plants for irrigation.

The table below shows the rate wastewater was treated and reused in millions of gallons per day (MGD).

Total Statewide Wastewater Treatment and Reuse by Federal Fiscal Year (Oct. to Sept.)

Federal Fiscal Year	Total Waste water Treated (MGD)	Wastewater Reused (MGD)	Percentage Reused
1994	151.6	10.5	6.9%
1995	150.1	11.1	7.4%
1996	150.1	12.3	8.2%
1997	150.0	15.6	10.4%
1998	150.0	17.0	11.3%
1999	150.0	19.5	13.0%
2000	150.0	20.2	13.5%
2001	150.0	19.9	13.3%
2002	150.0	24.0	16.0%

Source: Hawai'i Department of Health.
Note: Previous annual reports show lower treatment and reuse figures because only municipal wastewater treatment systems were included.



Environmental Indicators

Solid Waste Generation and Diversion

Wise management of solid waste through programs of waste prevention, energy resource recovery, and recycling reduces human impact on the environment. Waste minimization, recycling and composting also reduce the amount of solid waste that we send to our landfills. It was the goal of the state to reduce the solid waste stream prior to disposal by 50% by January 1, 2000. Recent data show that we have only met half our goal.

The following table shows the total amount of municipal solid waste generated and the amount recycled and composted. The amounts diverted do not include waste sent to H-Power for incineration and power generation.

Solid Waste Generation and Diversion in Hawai'i by Federal Fiscal Year (Oct. to Sept.)

Federal Fiscal Year	Produced Statewide (1,000 tons)	De facto Population (million)	Daily per Capita (lbs)	Disposed Statewide (1,000 tons)	Diverted Statewide (1,000 tons)	Percentage Diverted
1994	1,953	1.28	8.4	1,616	337	17%
1995	2,023	1.28	8.7	1,620	403	20%
1996	2,122	1.28	9.1	1,619	503	24%
1997	2,132	1.31	8.9	1,599	533	25%
1998	2,004	1.31	8.4	1,524	481	24%
1999	1,884	1.31	7.9	1,424	460	24%
2000	1,794	1.34	7.3	1,441	353	20%
2001	1,971	1.34	8.1	1,479	493	25%
2002	1,705	1.36	6.9	1,276	430	25%

Source: Hawai'i Department of Health and Department of Business, Economic Development and Tourism, Data Book 2000 (De facto Population).
Note: The 2000 numbers are partial as not all facilities have reported to DOH.

1999 recommendations to the Governor on
"Improving Hawai'i's Solid Waste Recycling Rate"

Support local recycling enterprises
Establish recycling demonstration projects
Implement a comprehensive recycling program
Invest in infrastructure to recycle
Provide more funding to the Department of Health
Support the development of a market for recycling products
Use glassphalt for paving roadways
Create preference for non-polluting recycling activities
Amend definition of maritime business to include recycling
Provide funds for market development research
Enforce current recycling laws
Expand the "advance disposal fee" program

Environmental Indicators

Hazardous Waste Generated

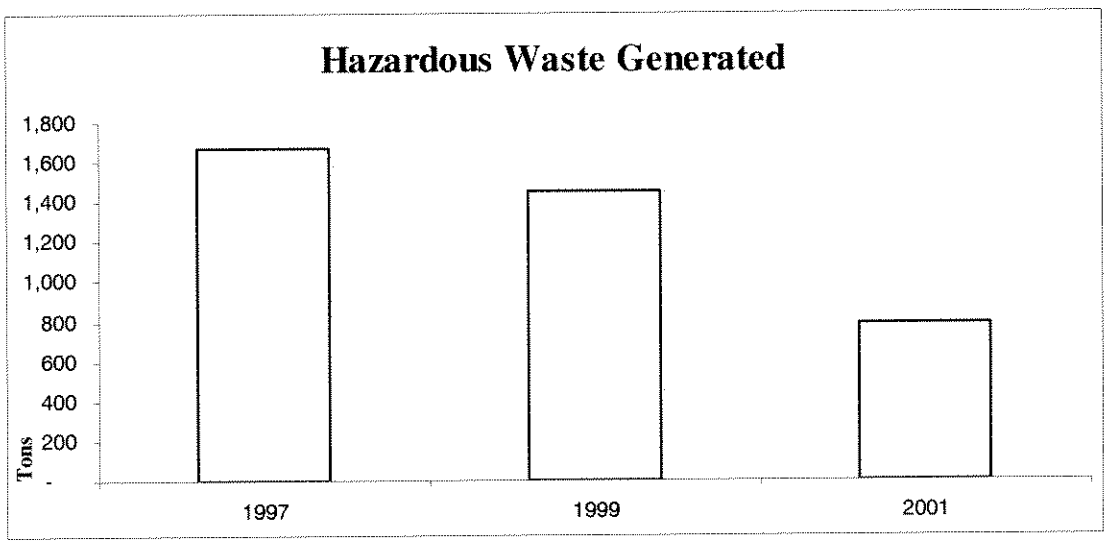
Hazardous wastes are classified as either ignitable, corrosive, reactive or toxic. These wastes have components that have been shown to be harmful to health and the environment. To protect worker safety, public health, and the environment, users of hazardous chemicals must minimize the amount of waste they generate.

State law requires large generators of hazardous waste to report biennially to the Director of Health the amount of hazardous waste generated. The following table shows the data.

Total Hazardous Waste Generated by Large Quantity Generators in Hawai'i Fed. Fiscal Yr. (Oct- Sept)

Federal Fiscal Year	1989	1991	1993	1995	1997	1999	2001
Hazardous Waste Generated (in tons)	1,499	1,343	1,702	NA	1,669	1,456	781

Source: Hawai'i Department of Health.
Note: i) Figures do not match previous years' annual report data as the numbers have been adjusted by the DOH.
ii) Data for 1995 are not included because the data collected by the Department of Health includes both **large and small** quantity generators.



Biodiversity Maintenance

Managed Forest Areas

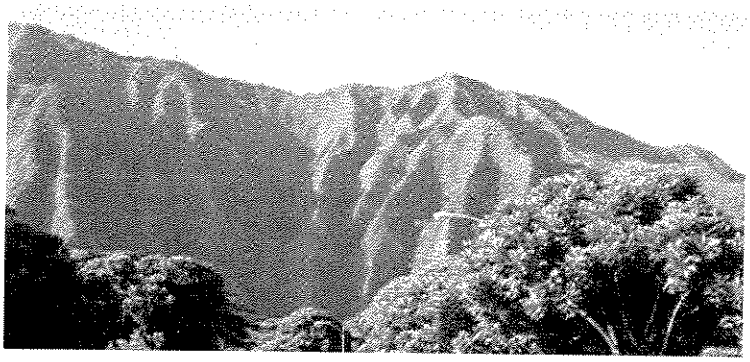
Hawaiian native forests have evolved over millions of years. Invasive species that choke out native plants, and feral animals that cause erosion on the fragile forest floor can cause serious damage to the native forest. Keeping out invasive species and feral animals and planting more native plants promotes healthy forests.

Acres of Forest and Natural Areas as of June 30 of each year

Year	Forest Reserve Land	Private Forest Land	Natural Areas
1995	622,339	328,742	122,703
1996	622,339	328,742	122,703
1997	643,134	328,742	109,164
1998	643,134	328,742	109,164
1999	643,134	328,742	109,164
2000	643,134	328,742	109,164
2001	643,134	328,742	109,164
2002	643,134	328,742	109,164
2003	643,134	328,742	109,164

Source: State of Hawai'i Data Book 2003.
Note: Forest Reserve Land = State-owned and privately-owned lands under surrender agreement in forest reserve system.
Private Forest Land = Private forest land within conservation district. The majority of these lands were previously in the forest reserve system.
Natural Areas = The State of Hawai'i created the Natural Area Reserves System, or NARS, to preserve and protect representative samples of the Hawaiian biological ecosystems and geological formations. In 1937, 1,027,299 acres were in forest reserves.

The council is always looking for improvents to its biodiversity indicators. Please contact OEQC if there are better indicators for the future.



Environmental Indicators

Watershed Partnerships

Forested watersheds provide us with nearly all of our state's fresh water. Watershed Partnerships are voluntary alliances of public and private landowners committed to the common value of protecting large areas of forested watersheds for water recharge and other values. More than 200,000 acres of important watershed areas in Hawai'i have been placed within these unique public-private partnerships

West Maui Watershed Partnership (50,000 acres)
The Maui County Board of Water Supply
Kamehameha Schools
C. Brewer and Company Limited
Amfac/JMB Hawai'i, L.L.C.
The Nature Conservancy of Hawai'i
Maui Land & Pineapple Co., Inc.
State Department of Land and Natural Resources
The County of Maui

East Maui Watershed Partnership (100,000+ acres)
State Department of Land and Natural Resources
The Nature Conservancy of Hawai'i
The Maui County Board of Water Supply
Haleakala Ranch Co.
East Maui Irrigation Co., Ltd.
Haleakala National Park
Hana Ranch
The County of Maui

Ko'olau Watershed Partnership (50,000+ acres)
Kamehameha Schools
State Department of Land and Natural Resources
State Department of Hawaiian Home Lands
Agribusiness Development Corporation
U.S. Army
Honolulu Board of Water Supply
Queen Emma Foundation
Bishop Museum
Manana Valley Farm LLC
Tiana Partners
Dole Food Co., Inc.
The Nature Conservancy of Hawai'i

East Moloka'i Watershed Partnership (5,000 acres)
Kamehameha Schools
Kapualei Ranch
Ke Aupuni Lokahi Enterprise Community Gov Bd
EPA
Hawai'i Department of Health
State Division of Forestry and Wildlife
Kalaupapa National Historical Park
Maui County
Maui Board of Water Supply
Moloka'i-Lana'i Soil and Water Conservation District
USDA Natural Resource Conservation Services
US Fish & Wildlife Service
US Geological Services
The Nature Conservancy of Hawai'i

Lanai Watershed Partnership (3,580 acres)
Castle & Cooke
Maui County Board of Water Supply
Hui Malama Pono O Lana'i
State Department of Land and Natural Resources
US Fish & Wildlife Service
USDA Natural Resources Conservation Service
Molokai-Lanai Soil and Water Conservation District
The Nature Conservancy of Hawai'i

Ola'a-Kilauea Watershed Partnership (420,000 acres)
Kulani Correctional Facility - State, Public Safety
Puu Maka'ala NAR - State, DLNR DOFAW
Kamehameha Schools
USDI - Hawaii Volcanoes National Park Service
USDA - Forest Service
USGS - Biological Resources Division

Leeward Haleakala Watershed Partnership (43,175 ac.)
Department of Hawaiian Home Lands
James Campbell Estate
Haleakala National Park
Haleakala Ranch
Kaonoulu Ranch
Nu'u Mauka Ranch
State Department of Land and Natural Resources
Ulupalakua Ranch
John Zwaanstra

Kohala Watershed Partnership (31,325 acres)

Parker Ranch
Kahua Ranch
Ponoholo Ranch
Kamehameha Schools
The Queen Emma Foundation
Department of Hawaiian Homelands
Department of Land and Natural Resources

Hawai'i Endangered Bird Conservation Program

The Hawaiian Islands are home to species of birds that are found nowhere else on the planet, exhibiting a staggering array of adaptations to life in their unique habitats. Prior to human disturbance, Hawaiian birdlife was abundant from the montane cloud forests to the dry forests by the sea in what are thought to have been the highest densities of any birds on earth. Of the more than 140 native breeding species and subspecies present prior to the colonization of the islands by humans, more than half have been lost to extinction. The DOFAW collaborates broadly with government and private researchers, managers, and landowners to implement programs designed to protect and recover Hawai'i's unique forest bird species and their habitats. Unfortunately, some birds that are released do not survive in the wild.

Endangered Bird Releases

Year	Species	Site	Number Released
1993	'Alala	South Kona	5
1994	'Alala	South Kona	7
1995	'Amakihi	Keauhou Ranch	16
1995	'Oma'o	Puu Wa'awa'a	2
1996	'I'iwi	Puu Wa'awa'a	2
1996	'Alala	South Kona	4
1996	Nene	Kaua'i; W. Maui; Hakalau	49
1997	'Oma'o	Puu Wa'awa'a	23
1997	'Alala	South Kona	8
1997	Nene	W. Maui	14
1998	'Alala	South Kona	3
1998	Nene	Hana 'Ula; Haleakala	17
1999	Puaiohi	Kawaikoi, Alaka'i	14
1999	Nene	Haleakala; Hana Ula	14
2000	Puaiohi	Kawaikoi, Alaka'i	5
2000	Nene	W. Maui, Kaua'i,	34
2001	Puaiohi	Kawaikoi, Alaka'i	15
2001	Nene	HAVO; Hakalau; Moloka'i; W. Maui	68
2002	Puaiohi	Halepa'akai, Alaka'i	8
2002	Nene	HAVO; Hana 'Ula, Moloka'i; Haleakala	34
2003	Nene	HAVO; Moloka'i	41
2003	Puaiohi	Halepa'akai, Alaka'i	18
2004	Nene	HAVO; Hana 'Ula, Moloka'i	22
2004	Puaiohi	Halepa'akai, Alaka'i	17
2004	Palila	Puu Mali, Hawai'i	10

Environmental Indicators

Health of Hawai'i Fisheries

Ocean resources are an integral part of Hawai'i's heritage. Aquatic resources are extremely valuable for ecological, social and economic reasons. Sustaining and enhancing Hawai'i's living aquatic resources and their habitats make environmental and economic sense.

The tables below shows the figures for the bottomfish ***spawning potential ratio (SPR)*** compiled by the Pacific Islands Fisheries Science Center of the National Marine Fisheries Service. Archipelagic SPR values of less than 20% are interpreted to mean that the overall stock is subject to recruitment overfishing. For more localized areas, such as the Main Hawaiian Islands, low values of SPR reflect realtively high reductions in localized abundance. Although localized reductions in abundance contribute to the overall stock condition, their significance is primarily measured in the context of sociological and economic factors within the fishery.

Main Hawaiian Islands Bottomfish Spawning Potential Ratio by Calendar Year

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Ehu	6	7	3	8	4	7	4	9	8	5
Hapu'upu'u	33	21	15	23	16	27	24	30	26	29
Onaga	9	6	4	5	5	6	6	3	5	10
Opakapaka	37	35	25	32	24	28	33	33	32	32
Uku	37	40	35	29	29	47	33	26	27	20

Source: National Marine Fisheries Service.
Note: SPR is calculated from catch size composition and commercial catch rate. SPR values of less than 20% are thought to be indicative of recruitment overfishing, the point at which there may be too few spawning fish remaining to maintain the population. Target SPR values for ehu and onaga recovery are 20%.

Archipelago-Wide Bottomfish Spawning Potential Ratio by Calendar Year

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Ehu	38	41	43	42	38	37	39	40	37	36
Hapu'upu'u	51	48	49	49	44	47	49	51	45	50
Onaga	39	33	39	25	22	34	27	26	26	31
Opakapaka	53	54	52	52	47	46	52	51	47	48
Uku	52	56	57	51	50	55	52	48	45	43

Source: National Marine Fisheries Service.

Environmental Quality

Air Quality Comparison with Other Cities

Breathing polluted air can cause health problems ranging from difficulties in breathing to aggravation of asthma, to cancer and even death. Air pollution can also damage buildings and vegetation.

All metropolitan areas in the Unites States with populations greater than 200,000 are required to report their air quality to the EPA. The table below lists the number of days the air quality at certain cities exceeded EPA standards.

Number of Days Air Quality Declared Unhealthy by EPA Standards by Calendar Year

	# of Monitoring Sites	1982	1993	1994	1995	1996	1997	1998	1999	2000	2001
Honolulu	6	0	0	0	0	0	0	0	0	0	0

Source: Hawai'i Department of Health.

Air Quality Measurements in Honolulu

Hawai'i's annual average concentrations of sulfur dioxide are so low that they do not pose a health concern. The following are annual average concentrations of sulfur dioxide from the Kapolei air monitoring station.

Air Quality Measurements in Honolulu by Calendar Year

	1996	1997	1998	1999	2000	2001	2002	Federal Standard
PM_{10} (ug/m^3)	14	8	9	14	14	16	15	50
CO (ug/m^3)	2127	4133	6726	4788	3990	5244	3990	40,000
SO_2 (ug/m^3)	3	2	2	2	1	2	3	80

Source: Hawai'i Department of Health.
Notes: PM_{10}, SO_2 are annual means; CO is the maximum 1-hour value recorded in the year.

Environmental Indicators

Beaches Posted as Unsafe Due to Pollution

Residents and visitors use our public beaches and the ocean for recreation and fishing. Sewage and chemical spills can restrict our enjoyment and use of the shoreline as well as poison aquatic life.

The following table shows the number of times beaches were posted with warning or closure signs (unsafe due to water pollution) by the Department of Health. Beach closures increased 50% in 1999 largely due to the DOH requiring more precautionary closures.

Days Beaches Posted as Unsafe Due to Pollution by DOH by Calendar Year

Year	Days beaches closed
1994	20
1995	16
1996	45
1997	28
1998	13
1999	26
2000	16
2001	20
2002	36
2003	0

Source: Hawaii Department of Health.
Note: i) There were additional postings of warning signs on streams, lakes, and harbors.
ii) Other agencies may also post warning signs on beaches. For example, the City and County of Honolulu also posts warning signs on beaches after opening stream mouths to drain water.

Oil and Chemical Spills

Oil and chemical spills pollute our ocean, streams, groundwater. In addition to the environmental and ecological damage, cleanup costs run into the millions of dollars. Even with the best response plan, it is impossible to restore the environment to its original condition. Spill prevention must be our primary strategy. The table below shows the number of oil and chemical spills.

Oil and Chemical Spills in Hawai'i Federal Fiscal Year (Oct. to Sept.)

Federal Fiscal Year	Oil Releases	Chemical Releases	Total Spills
1995	126	222	348
1996	237	230	467
1997	295	205	500
1998	225	305	530
1999	240	286	526
2000	163	303	466
2001	171	271	442
2002	218	268	486

Source: Hawai'i Department of Health.

Environmental Indicators

Safe Drinking Water

Fresh water is a precious resource. Pesticides, fertilizers, oils and chemicals that we apply to the ground eventually seep into our drinking water aquifers. We must protect our drinking water supplies from contamination, or spend millions of dollars for treatment.

Public water systems provide piped water for human consumption such as drinking and washing. They include both municipal and private facilities for the collection, treatment, storage and distribution of water. The next table shows the percentage of Hawai'i's population served drinking water in compliance with 1994 maximum microbiological and chemical contaminant levels. Water which exceeds maximum contaminant levels (MCLs) is believed to be harmful to human health.

Population Served Safe Drinking Water Federal Fiscal Year (Oct. to Sept.)

Federal Fiscal Year	Percentage Population Served Water Below MCLs
1994	95.0%
1995	98.0%
1996	99.5%
1997	98.2%
1998	99.8%
1999	99.7%
2000	98.8%
2001	99.7%
2002	100.0%
2003	100.0%

Source: Hawai'i Department of Health.

Stream Quality

The ancient Hawaiian concept of ahupua'a embraces the watershed perspective linking the mountains to the sea. This stream quality refers to the inland part of a watershed, including all stream tributaries.

Number of Impaired Streams Listed Statewide by Calendar Year

Year	Number of Impaired Streams
2002	55
2004	70

Source: Hawai'i Department of Health. DOH published a list of impaired streams in 2002 and

Environmental Indicators

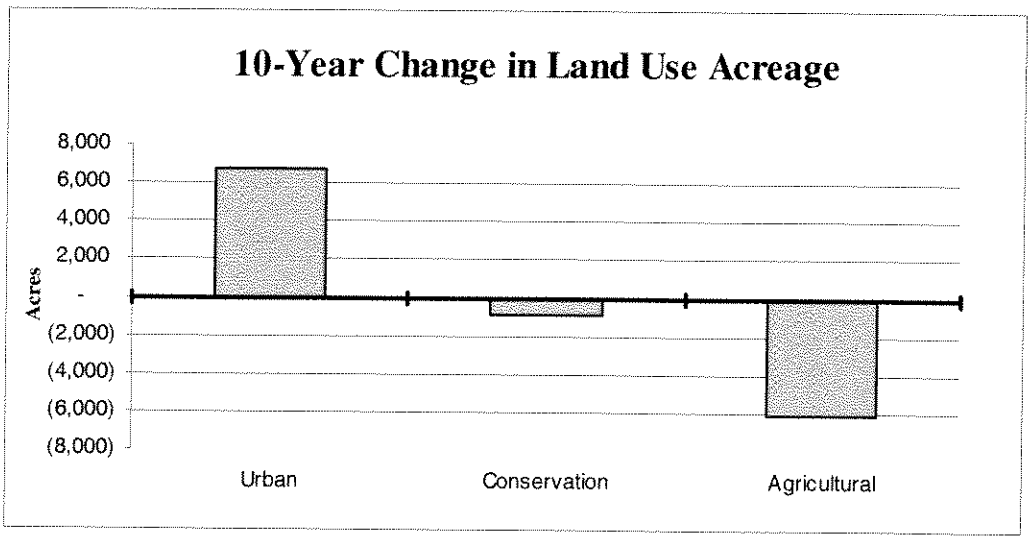
Statewide Land Use District Acreage

There are four land use districts designations for all lands in the state: urban, rural, agricultural, and conservation. With the decline of sugar cane and pineapple, there may be less productive agricultural land in Hawai'i than previously. The following table shows that since 1990, more than 30,000 acres of agricultural land have been converted to Urban and Conservation designations.

State Land Use District Acreage as of December of Each Year

Year	Land Area in Thousand Acres			
	Urban	Conservation	Agricultural	Rural
1994	189	1,975	1,939	10
1995	190	1,976	1,936	10
1996	192	1,975	1,936	10
1997	192	1,975	1,935	10
1998	193	1,975	1,934	10
1999	195	1,975	1,933	10
2000	193	1,976	1,933	10
2001	195	1,974	1,934	10
2002	195	1,974	1,933	10
2003	196	1,974	1,932	10

Source: State Land Use Commission, Department of Business, Economic Development and Tourism.



Public Awareness/Concern

State Environmental Expenditures

Environmental protection is one of the 11 primary objectives of the state government. Programs within the environmental protection structure include: Department of Health (Environmental Management, Environmental Health Administration, and Office of Environmental Quality Control); Department of Land and Natural Resources (Forestry & Wildlife, Commission on Water Resources Management, Conservation and Resources Enforcement, Natural Area Reserves, Aquatic Resources, Mineral Resources, and Conservation District); and Department of Agriculture (Pesticides).

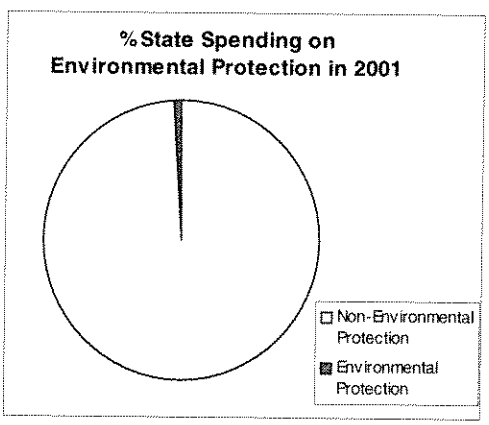
More funding to promote the goals of Hawai`i's environmental programs will result in better overall state environmental quality. The portion of expenditures for environmental protection reflects the priority given to environmental programs relative to other functions.

The table below shows the sum of money and the percentage of total state expenditures spent on environmental protection programs.

State Expenditures on Environmental Protection Programs by State Fiscal Year (July-June)

Fiscal Year	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
State Expenditures (million $)	4,953	5,092	4,906	5,338	5,393	5,315	5,538	6,175	6,710	7,198
Environmental Expenditures (millions $)	27	30	61	45	60	69	69	51	64	66
Environmental Spending as % of State Expenditures	0.55%	0.59%	1.25%	0.85%	1.10%	1.30%	1.24%	0.83%	0.95%	0.92%

Source: The Variance Report, State of Hawai'i, compiled by the Department of Budget and Finance. This report is prepared annually and submitted to the state Legislature.



The Environmental Council for 2004 strongly recommends that State and County fiscal spending increase in percentage or in proportion to total expenditures in order to continue to focus on improving the Quality of the Environment.

Environmental Indicators

Registered Motor Vehicles in Hawai'i

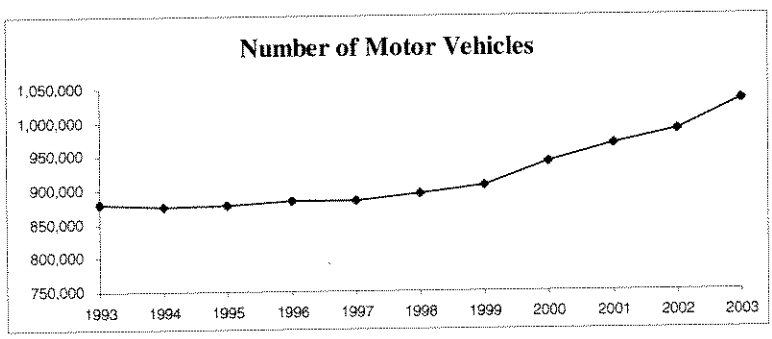
Exhaust from motor vehicles contains many air pollutants, including carbon monoxide, ozone and particulates. We breathe these toxic pollutants. Reducing the number of motor vehicles on our roads and improving emission control technology will improve air quality. We can help reduce air pollution by walking, biking or taking the bus instead of riding gas-powered cars.

The table below shows the total number of registered motor vehicles in Hawai'i.

Number of Registered Motor Vehicles In Hawai'i by Calendar Year

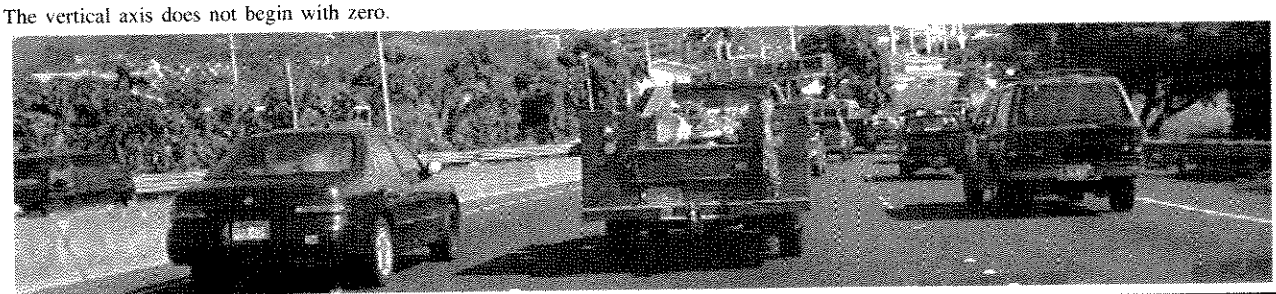
Year	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Number of Motor Vehicles (in thousands)	875	878	885	884	893	907	941	967	988	1,031
State de facto Pop. (million)	1.26	1.28	1.28	1.28	1.31	1.31	1.34	1.34	1.36	1.36
Vehicles per Person	0.69	0.69	0.69	0.69	0.68	0.69	0.70	0.72	0.73	0.76

Source: Statewide data provided by the City and County of Honolulu, Department of Finance, Motor Vehicles and Licensing Division.
Note: i) Carbon monoxide is a colorless, odorless and tasteless gas.
ii) Ozone is a poisonous form of pure oxygen. It is pungent smelling and faintly bluish.
iii) De facto population obtained from State Data Book.



The trending of the increase in motor vehicle registrations and the reduction in Mass Transit usage highlights the need for both the State and Counties to address the need for a transportation system which will increase in ridership and reduce independent motor vehicle usage in order to reduce gas emissions.

Note: The vertical axis does not begin with zero.



Noise Complaints Received by the Health Department

Loud noises can lead to health problems such as stress and hypertension. Noise also causes distress to wildlife and disrupts people's enjoyment of nature and wilderness. Usually, increase in urbanization results in more noise.

The following table shows the number of noise complaints (by category) received by the Department of Health.

Number of Noise Complaints Received by the Department of Health by Calendar Year

Type of Complaint	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Agricultural	1	3	1	0	0	0	6	8	0	3
Aircraft	12	11	5	6	0	1	3	1	0	2
Commercial	21	6	3	13	4	13	8	11	11	7
Construction	157	142	140	112	146	106	250	231	193	147
Industrial	6	2	3	7	9	2	9	14	14	5
Miscellaneous	17	12	12	14	18	12	14	10	7	10
Refuse Collection	41	35	41	68	43	33	30	35	23	22
Stationary	93	112	109	104	75	93	97	96	106	92
Unknown	4	13	8	8	13	11	8	7	8	13
Animal	22	24	16	14	12	8	14	14	8	7
Hobby	8	9	9	12	4	6	10	9	13	11
Maintenance	29	37	27	21	25	20	17	19	22	5
People	16	12	13	13	5	8	2	7	4	4
Sound Production	62	48	40	45	51	47	42	44	35	22
Vehicular	20	21	30	24	22	12	26	17	11	13
Total	**509**	**487**	**457**	**461**	**427**	**372**	**536**	**523**	**455**	**363**

Source: Department of Health - Noise, Radiation and Indoor Air Quality Branch.

Environmental Indicators

Bikeway Miles

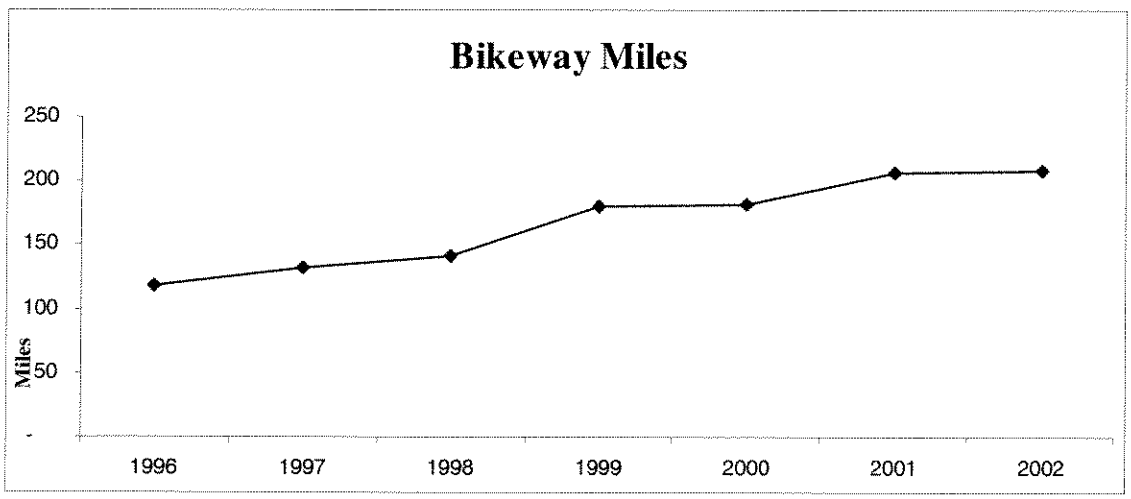
Alternate transportation modes such as bicycling and mass transit systems conserve energy, alleviate traffic congestion, reduce air pollution, and support physical fitness and recreation. Overall, they improve environmental quality and the urban landscape.

The next table shows the total miles of bikeways in Hawai'i by island.

Miles of Bikeways in Hawai'i by Calendar Year

Island	Bikeway Miles							
	1995	1996	1997	1998	1999	2000	2001	2002
Kaua'i	3.8	3.8	6.8	6.5	6.2	6.2	21.0	22.2
O'ahu	55.4	66.1	56.6	60.3	73.7	75.1	94.2	98.0
Maui	19.6	40.0	40.8	43.3	67.1	67.1	60.3	60.4
Hawai'i	8.2	8.2	27.8	30.8	32.7	32.7	31.3	27.4
Statewide	**87.0**	**118.1**	**132.0**	**140.9**	**179.7**	**181.1**	**206.8**	**208.0**

Source: State Department of Transportation, Highways Division
Note: i) Bikeway miles are those within State and County jurisdiction.
ii) Bikeway miles are provided only for those that are designated as such through signage. The State and counties have installed many miles of improved paved shoulders, 4 feet or wider, on roadways which can accommodate bicycles but are not designated routes.



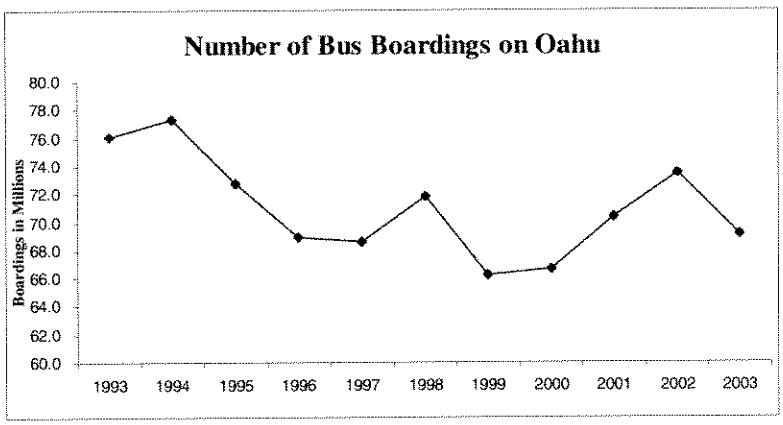
Number of Bus Boardings on O'ahu

The data below are estimates of the number of boardings on O`ahu for TheBus. An effective mass transit system can reduce traffic congestion and improve the quality of life in a city. These estimates are calculated based on the amount of money in the fare box, number of monthly passes sold, and random samples.

Number of Bus Boardings on O'ahu by Calendar Year

Year	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Total Number of Bus Boardings (in millions)	77.3	72.7	68.9	68.6	71.8	66.2	66.6	70.4	73.5	69.1

Source: Public Transit Division of the Department of Transportation Services.
Note: i) Figures include residents and visitors.
ii) The figures are calendar year estimates of total passengers for TheBus calculated from reports to the American Public Transit Association.



Note: The vertical axis does not begin with zero.

Environmental Indicators

2004 Environmental Report Card

In this section, the Environmental Council grades the status of Hawai'i's environment. This report card provides citizens and policy makers with a quick assessment of how well we are caring for our environment. The Council hopes this evaluation stimulates the public to learn about and take action to improve our environment. Your thoughts and suggestions on the content and methodology of this report card are welcomed.

Environmental Report Card	**2004**
Energy Use	D
Use & Recycling of Resources	C+
Biodiversity Maintenance	C-
Air Quality	A+
Water Quality	B
Terrestrial Quality	B
Public Awareness & Concern	C-
Overall Grade	**C+**

Method for Calculating Environmental Status Grades:

Step 1.

Environmental Status Scores and Grades

The method used is based on the National Wildlife Federation's 1971 Environmental Quality Index (Kimball, 1972). Individual indicator scores are assigned as follows:

Present condition equal to or better than optimum condition = 100
Present condition equal to unacceptable condition = 0

A linear scale is employed to assign scores for conditions falling between the limits listed above. Letter grades corresponding to the assigned scores are given in the same manner as last year.

Step 2.

The environmental indicators are then organized into seven categories. The categories are: Energy Use, Use and Recycling of Resources, Biodiversity Maintenance, Air Quality, Water Quality, Terrestrial Quality, Public Awareness & Concern.

A weight is assigned to each of the indicators in a given category. This weight is used to obtain the score for each category. The weights are assigned to each indicator in relation to the empirical importance of the indicator itself as well as the reliability of its related data. For simplicity in interpreting the "0" to "100" scores, letter grades are used.

Step 3.

Finally, a weighted average of the nine components is used to obtain a grade for Hawai`i's environment.

Limitations:

The comprehensiveness and accuracy of the grades are limited by the following factors:

a) The assessment is based on a sample of 20 environmental indicators. This small sample is not a full representation of Hawai'i's environment.

b) The benchmarks for unacceptable and optimum conditions are based on assumptions and judgments made by the Council (see below). Others may have very different opinions about the figures.

c) The relative importance value to compute the weighted averages for the categories and total index is also subjective based on the Council's beliefs.

This is the fifth attempt to assess the status of Hawai'i's environment. The Council hopes to continually refine and improve this assessment process.

Environmental Indicators

Benchmarks, Trends and Status Scores

Indicator	Unacceptable Condition	Latest Year Condition	Optimum Condition	Status	
				Points	Grade
% of Energy from Renewable Sources (Latest Data Year 2003)	0.0	5.3	25.0	21	D-
Greenhouse gas emissions in million tons (2003)	25.0	21.7	15.7	35	D+
Water Consumption in Million Gallons (2003)	100,000	80,735	50,000	39	D+
% of Treated Wastewater Reused (2002)	0	16	25	64	B-
Daily per capita Waste Generated in pounds (2002)	10.8	6.9	3.6	54	C
% of Waste Diverted (2002)	0	25	75	33	D
Hazardous Waste Generated in Tons (2001)	3,000	781	500	89	A
Watershed Partnerships (2003)	0	650,000	1,000,000	65	B-
Main HI Islands Onaga Spawning Potential Rate (2003)	0	10	50	20	D-
Particulate Levels as a % of Federal standards (2002)	100	30	75	100	A+
Number of Unhealthy Air Days (2001)	1	0	0	100	A+
Number of Impaired Streams (2004)	100	70	0	30	D
% of Population Served Water Below MCLs (2003)	90	100	100	100	A+
Conservation Land Area in million acres (2003)	1.03	1.97	2.25	77	B+
Number of Oil and Chemical Spills (2002)	1000	486	100	57	C+
% of State Funding for Environment (2003)	0	0.92	2.50	37	D+
Number of Motor Vehicles per capita (2003)	1	0.76	0.33	36	D+
Noise Complaints (2003)	1000	363	100	71	B
Bikeway Miles (2002)	0	208	1309	16	F
Annual TheBus Boardings in millions (2003)	0	69	124	56	C+

Environmental Indicators

Scores and Grades for Environmental Status

Category	Indicator	Status Points	Indicator Weights	Category Scores	Category Grade	Category Weights	Total Score	Total Grade
Energy Use	% of Energy from Renewable Sources	21	50%	28	D	15%	59	C+
	Greenhouse Gas Emissions	35	50%					
Use & Recycling of Resources	Water Consumption in Million Gallons	39	20%	56	C+	15%		
	% of Treated Wastewater Reused	64	20%					
	Daily per capita Waste Generated in pounds	54	20%					
	% of Waste Diverted	33	20%					
	Hazardous Waste Generated in Tons	89	20%					
Biodiversity Maintenance	Watershed Partnerships	65	50%	43	C-	10%		
	Onaga Spawning Potential Rate	20	50%					
Air Quality	Particulate Levels as % of National Standard	100	50%	100	A+	15%		
	Number of Unhealthy Air days	100	50%					
Water Quality	Impaired Streams	30	50%	65	B	15%		
	% of Pop. Served Water Below MCLs	100	50%					
Terrestrial Quality	Conservation Land Area in million acres	77	50%	70	B	15%		
	Number of Oil & Chemical Spills	57	50%					
Public Awareness & Concern	% of State Funding for Environment	37	20%	43	C-	15%		
	Number of Motor Vehicles per capita	36	20%					
	Noise Complaints per 100,000 People	71	20%					
	Bikeway Miles	16	20%					
	Annual TheBus Boardings in millions	56	20%					

Environmental Indicators

Assumptions:

The Environmental Council's assumptions for unacceptable conditions, year 2002 goals, and optimum levels for Hawai'i's environmental indicators are listed below.

a) Renewable Energy: The Council prefers a goal of 25% for the amount of energy from renewable sources.

b) Greenhouse Gasses: The Council supports the Kyoto Protocol which calls for emissions of 7% below 1990 levels by 2010. This works out to 5.7 million tons by 2010 for optimum. The unacceptable level is 25 million tons.

c) Water Consumption: The Council has set 50,000 million gallons per year as the optimum level. 100,000 is unacceptable.

d) Treated Wastewater Reused: The reuse target is 25%.

e) Waste Generated: According to Healthy Hawai'i 2000, the national objective is to reduce the average pounds of municipal solid waste produced per person each day to no more than 3.6 pounds. The optimum level is the same as the national objective. It is unacceptable to produce 3 times the national objective.

f) Waste Diverted: Pursuant to section 342G-3, HRS, it was the goal of the state to reduce the solid waste stream prior to disposal by 50% by the year 2000. The Council sets 75 as an optimum level.

g) Hazardous Waste: The optimum target is 500 tons. 3,000 tons is unacceptable.

h) Watershed Partnerships: Optimally, half of the state's conservation land should be in partnerships.

i) Onaga SPR: The optimum level is 50%.

j) Particulate Levels: The optimum level is 75% of the federal standard.

k) Unhealthy Air Days: Not a single day should be declared unhealthy in Hawai'i.

l) Impaired Streams: 100 impaired streams is unacceptable.

m) Oil and Chemical Spills: The optimum number is 100 spills or less.

n) Conservation Land: The State Land Use District Boundary Review, 1992, recommended that approximately 150,000 acres of Urban and Agricultural lands be converted to Conservation zoning. The report also identifies another 139,000 acres of non-Conservation land as "Areas of Critical Concern" that should be protected for its conservation resource value. Therefore, the optimum level is the conversion of 289,000 acres. Any less amount than one fourth of state lands in the Conservation district is unacceptable.

o) Drinking Water: The optimum level to have 100% of the population drinking clean water.

p) Environmental Spending: Based on information presented in World Resources Institute's 1992 Environmental Almanac the average state in the U.S. spends approximately 1.9% of its state budget on environmental protection. The optimum level is 2.5%.

q) Motor Vehicles: One motor vehicle per person is unacceptable. The optimum level should be one motor vehicle for every three people (the average household size is three people).

r) Noise Complaints: An average of 100 noise complaints per hundred thousand people is unacceptable. The optimum number is 10 or less per hundred thousand people.

s) Bikeway Miles: According to Bike Plan Hawai'i a total of 1,309 miles of bikeways is proposed. The optimum condition is the construction of all the bikeways proposed.

t) Bus Ridership: The present bus fleet is 525. The FEIS for the Honolulu Rapid Transit Program considered an expanded bus fleet of 997 buses for the Transportation System Management alternative. Based on Table 1.1 in the Comprehensive Bus Facility & Equipment Requirements Study, we estimate that the number of boardings for a fleet of 997 buses would be 124,000,000 per annum. The optimum level is 124,000,000 boardings.

Letter Grades:

For the sake of simplicity in interpreting the "0" to "100" scores, letter grades are used. The scale that we used was obtained from A Rating Guide to Life in America's Fifty States (Thomas, 1994).

100 = A+
85-99 = A
80-84 = A-
75-79 = B+
65-74 = B
60-64 = B-
55-59 = C+
45-54 = C
40-44 = C-
35-39 = D+
25-34 = D
20-24 = D-
0-19 = F

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